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MBA PROFESSIONAL REPORT

Supply and Demand for Business Education in Naval Aviation


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　　　　In light of the Navy's transformation plan, advanced business education is increasing in importance.　As part of the Navy's *Sea Power 21* strategy, Sea Enterprise encourages Naval Aviation to steer historical management practices towards better business practices.　As pilots and Naval Flight Officers evolve from Mission Commander to Commanding Officer, they must be equipped with requisite business skill sets to engage the challenge of balancing aircraft modernization with current readiness.　This project analyzes the supply and demand for postgraduate business education to determine how prepared Naval Aviation is to achieve long-term transformation objectives.　The results show that 25 percent of all aviation officers (O-1 to O-6) have a graduate business degree; 17 percent of Commanding Officers with advanced degrees have a business specialization; and 2.5 percent of aviation officer billets require a postgraduate business degree.　Recommendations to better prepare the aviation community for the Sea Enterprise environment include: (1) Early emphasis of graduate business education, (2) Promote advanced business education as a major career milestone, (3) Tie first shore tour assignments to graduate business education, and (4) Increase the overall billet requirement for advanced business degrees.　These improvements may greatly enhance the Navy's efforts towards achieving its transformation goals.

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SUPPLY AND DEMAND FOR BUSINESS EDUCATION IN NAVAL AVIATION

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Submitted in partial fulfillment of the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

NAVAL POSTGRADUATE SCHOOL
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SUPPLY AND DEMAND FOR BUSINESS EDUCATION IN NAVAL AVIATION

ABSTRACT

In light of the Navy's transformation plan, advanced business education is increasing in importance. As part of the Navy's *Sea Power 21* strategy, Sea Enterprise encourages Naval Aviation to steer historical management practices towards better business practices. As pilots and Naval Flight Officers evolve from Mission Commander to Commanding Officer, they must be equipped with the requisite business skill sets to engage the challenge of balancing aircraft modernization with current readiness. This project analyzes the supply and demand for postgraduate business education to determine how prepared Naval Aviation is to achieve long-term transformation objectives. The results show that 25 percent of all aviation officers (O-1 to O-6) have a graduate business degree, 17 percent of Commanding Officers with advanced degrees have a business specialization, and 2.5 percent of aviation officer billets require a postgraduate business degree. Recommendations to better prepare the aviation community for the Sea Enterprise environment include: (1) Early emphasis of graduate business education, (2) Promote advanced business education as a major career milestone, (3) Tie first shore tour assignments to graduate business education, and (4) Increase the overall billet requirement for advanced business degrees. These improvements may greatly enhance the Navy's efforts towards achieving its transformation goals.

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I. INTRODUCTION

A. BACKGROUND

Naval aviators are responsible for operating some of the most powerful and technologically advanced aircraft ever developed in the history of aviation. As such, the trend for naval aviators has been to hone their flying and combat leadership skills by remaining in the cockpit for as long as possible. However, as aviators advance in their careers, they must also sharpen their business skills in order to prepare for senior leadership roles.

Current Department of Defense (DoD) transformation initiatives, such as the Business Management Modernization Program (BMMP), focus on improving DoD business practices. Encouraged by DoD, the Navy has adopted *Sea Power 21* as its roadmap for transformation. A supporting initiative of *Sea Power 21* is Sea Enterprise. This initiative is the Navy's blueprint for introducing better business practices to the service.[1] As such, Sea Enterprise focuses on optimizing the use of available resources in order to apply savings towards future capabilities.

However, future uncertainty, such as prosecuting the Global War on Terrorism (GWOT), coupled with aging legacy aircraft and scarce budget resources all weigh heavily on transformation efforts. How well aviation officers, at the ranks of Captain and Commander, manage transformation may ultimately depend upon their level of business expertise.

B. RESEARCH OBJECTIVES

The purpose of this research is to analyze how prepared senior aviators are to achieve the long-term objectives of the Navy's transformation plan. Future leaders must be able to manage both the operational and business challenges of Naval Aviation in the 21st Century. By analyzing the supply and demand of naval aviation officers who have postgraduate business education, this research may yield insights on how effective the

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[1] Lorenzo Cortez, "Navy Officials Sees Enduring Value of Sea Enterprise Initiative," *Defense Daily*. no. 222 (2004): 1

current Navy officer personnel management system is at preparing and selecting officers for promotion and command. Finally, this report provides a signal to the aviation community whether the pursuit of graduate business graduate education is good for career advancement and considers recommendations to the Naval Postgraduate School's Executive MBA (EMBA) program.

C. RESEARCH QUESTION(S)

1. Primary Research Question

- What is the current supply and demand for advanced business degrees within the Naval Aviation community?

2. Secondary Research Question

- What is the percentage of aviation officers who have a postgraduate business degree?

- What is the percentage of Commanding Officers who have a postgraduate business degree?

- What are the specialization trends for aviation billets that require a master's level degree or higher?

- What is the percentage of advanced education billets that require a specialization in business?

D. SCOPE AND LIMITATIONS

The scope of this project is to examine current trends that support the need for aviators to pursue higher education in business. As such, the entire naval aviation officer population was observed. For this project, only pilots, Naval Flight Officers (NFOs), and formerly rated pilots and NFOs (1300 designator) who remain a part of the community were analyzed. Throughout this study, this group will be collectively addressed as "aviation officers."

There are several limitations to this study. First, the data used in this study only represent a snapshot of the Naval Aviation officer community. Although, the aviation community population as a whole is dynamic and changes constantly, trends take time to develop. Therefore, the picture presented in this study should be valid for some time.

Next, the analysis of officer education levels was restricted to aviation officers between the ranks of Ensign (O-1) and Captain (O-6). This limit was required in order to focus only on the current and future leadership that will most likely execute current and future transformation initiatives. Finally, this study will only consider making recommendations related to the Naval Postgraduate School's Defense-focused EMBA program. However, findings from this study may be relevant to other graduate programs open to aviation communities.

E. METHODOLOGY

Methodology for this MBA project includes the following steps:

1. A literature review was conducted to acquire a broad understanding of the current trends regarding the importance of graduate business education and the Navy. Relevant information was available through newspaper articles, periodicals, government publications, and other sources. Specifically, the literary review focused on the following areas:

- The changing military environment and the important role senior aviation officers will play in shaping naval aviation in the 21st Century.
- Aviation officer career opportunities and requisite business skills required in the 21st Century.

2. To further analyze the aviation community, a cross-sectional study of the fiscal 2005 Officers Master File (FY 05 OMF) was performed. Data from the FY 05 OMF were provided by Naval Personnel Command staff (PERS- 432). Key parameters of interest were officer education levels, and command screen results. The entire aviation officer population was studied. Thus, the records of 13,824 officers between the grades of O-1 through O-6 were analyzed for this project.

3. A list of Aviation officer billets that require a master's degree or higher were provided by PERS-432. These billets are only available for Lieutenant Commanders and above. The Total Force Manpower Management System (TFMMS) database tracks advanced education billet requirements through the use of the Navy's Subspecialty System. Only billets for the grades of O-4 to O-6 were analyzed.

4. All data collected were compiled and synthesized to provide the basis for this report's analysis and findings.

F.   ORGANIZATION OF RESEARCH

This MBA project report is divided into five chapters. Chapter I provides a background and overview of the area of analysis. Chapter II reviews literature relating to the career trends of naval aviation officers and their need to pursue graduate-level business education. Chapter III discusses the methodology and describes the data parameters used in this study. Chapter IV lists the results of: (1) the analysis of aviation officer's education levels, (2) the educational achievements of officers who have screened successfully for command, and (3) the analysis of aviation officer billets that require a master's degree or higher. Command-screened officers were further grouped into separate categories for pilots and NFOs. Chapter V provides a summary of findings for this study, offers conclusions, and addresses areas for future research. Appendix A lists tables that further describe Command and Operational Screen Results (CSR) codes and Appendix B provides a table that shows education core skills requirements.

II. LITERATURE REVIEW

A. TRENDS SUPPORTING BUSINESS EXPERTISE

1. Leadership

In addition to a plethora on new legislation in the 1990s, such as Government Performance and Results Act (GPRA) of 1993, Government Management Reform Act (GMRA) of 1994, and the Federal Financial Management Improvement Act (FMIA) of 1996, the growing desire for business expertise throughout DoD has increased significantly under the reign of Secretary of Defense, Donald Rumsfeld. This trend may best be explained by the education backgrounds of the country's current leadership. For example, President George W. Bush holds a Master's Degree of Business Administration (MBA) from the Harvard Business School. Both Vice President Richard Cheney and the Defense Secretary were former Chief Executive Officers (CEOs) of *Fortune* 500 companies. Furthermore, the outgoing Secretary of the Navy, Gordon England, earned a MBA from Texas Christian University. Nonetheless, the outgoing Chief of Naval Operations (CNO), Admiral Vern Clark, holds a MBA from the University of Arkansas.

As a result of these qualifications, corporate-style business concepts are increasingly being implemented throughout the Navy. Thus, the changing tide of the way the Navy conducts business dictates the need for aviation officers to earn post-graduate degrees in business prior to assuming senior level positions. In recognition of this trend, senior leadership within the Aviation community has already begun to address this issue. For example, Vice Admiral Gerry Hoewing, Chief of Naval Personnel, has continually stressed the need for aviation officers to pursue graduate education. During a speech at the 2004 annual symposium for the Naval Aviation Museum Foundation, Admiral Hoewing made the following remarks:

> Our Naval aviation career path is an extremely full career. Between sea duty and shore duty and staff jobs, wedging in the opportunity for education has been difficult in the past. We're going to make that a higher

priority to ensure our officers have the requisite skills necessary to be better business managers and better leaders at the senior levels.[2]

This statement further validated the important role graduate business education will play in the careers of future commanders.

2. Naval Aviation Transformation

Inspired by a CNO that is a business school graduate, the Navy is undergoing an ambitious transformation effort. *Sea Power 21* is the Navy's overarching vision for re-inventing all aspects of its operation. Within this vision, a supporting initiative, Sea Enterprise, focuses on improving business practices. To comply with the CNO's transformation vision, naval aviation has adopted the Naval Aviation Readiness Integrated Improvement Program (NAVRIIP). The program calls upon leaders of Naval Aviation to develop better business practices. Specifically, NAVRIIP guidance states the following:

> NAVRIIP aligns aviation business processes to Sea Enterprise - By driving cost-wise readiness initiatives, NAVRIIP compels commanders to identify operating costs, cost drivers and methods to reduce costs. The program enables Naval Aviation leaders to develop and implement appropriate strategies for reinvestment.[3]

To accomplish this objective, NAVRIIP has spawned several supporting initiatives. One example is Enterprise AIRSpeed. This initiative focuses on reducing costs through the process of ongoing improvement. Specifically, the mission statement for the NAVRIIP/AIRSpeed program defines AIRSpeed as NAVRIIP's enabler for operationalizing cost-wise readiness across the Naval Aviation Enterprise.[4]

Not surprisingly, the initiatives responsible for transforming Naval Aviation are all based upon concepts and business practices borrowed from private industry. Business school concepts, such as Lean, Six Sigma, and Theory of Constraints, are being used to

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[2] Gerald Hoewing, "CNP Stresses Importance of Graduate Education for Naval Aviators," *Navy Newsstand* (May 2004) [on-line]; available from http://www.news.navy.mil/search/display.asp?story_id=13384; Internet accessed 10 February 2005.

[3] NAVRIPP Newsletter, Issue 3, December 2003.

[4] Commander, Naval Air Force, U.S. Pacific Fleet. *"History and Background of NAVRIIP and AIRSpeed"* [on-line]; available from http://www.airpac.navy.mil/navriip/history.asp; Internet accessed 23 April 2005.

improve Naval Aviation readiness and increase efficiency. Furthermore, scarce resources are causing senior aviation leadership to adopt additional business concepts, such as value chain analysis, to further examine the entire Aviation enterprise seeking additional improvements. Another example of the need for commanders to be able to optimize the Navy resources was expressed by the CNO in the following statement:

> ...inflating the 1967 budget through standard inflation practices, the Navy budget was $129 billion. For us it's $119 [billion]. In 2005 we had the best acquisition year we've had in over a decade. We built eight ships and 113 airplanes...In 1967, the $129 billion dollar program built 47 ships in one year and 620 aircraft."[5]

3.   Aircraft Modernization

Effectively managing aircraft to modernization is another key challenge Naval Aviation faces in the 21st Century. After the end of the Cold War, the budget impact was felt by the decision to reduce naval air forces procurement levels. According to Vice Admirals Malone and Zortman,[6] "Because the Navy procured fewer aircraft than required for recapitalization during the 1990s, the average age of naval aircraft has increased from 17.7 years in fiscal year (FY) 2000 to 18.6 in FY 2004." Thus, the concern is that the aging fleet of naval aircraft is losing its competitive edge with respect to potential enemy forces worldwide.

Accordingly, Naval Aviation is committed to an aggressive modernization program. Its future revolves around new aircraft such as the F/A-18E/F, EA-18G, Multi-Mission Aircraft (MMA), Advanced Hawkeye, and Joint Strike Fighter (JSF). Although resources earmarked for aviation (see Figure 1) and aircraft production, as shown in Table 1, are scheduled to increase, budget cuts and the rising costs of war in Iraq and Afghanistan contribute to the fact that the Navy's future operating environment is one of funding scarcity.

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[5] Ann Roosevelt, "Key Navy Challenge Is Ship-, Aircraft-Building, CNO Says," *Defense*. No. 225 (2005): 1

[6] Mike Malone and James Zortman, "Naval Aviation Must Balance Current and Future Readiness," United States Naval Institute. Proceedings. no. 130 (July 2004): 76
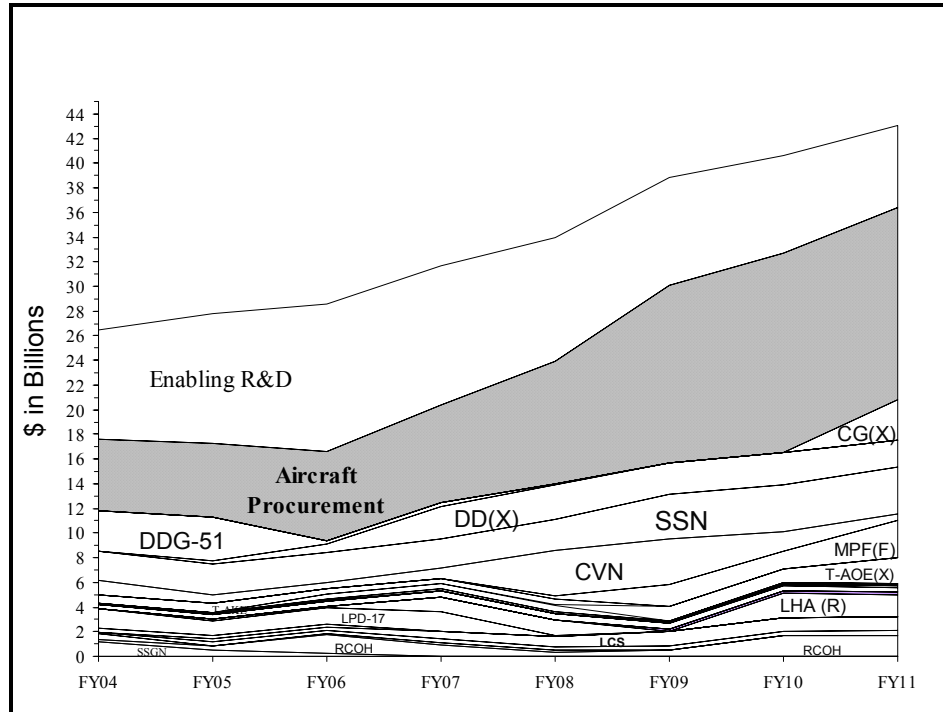
Figure 1.   Aircraft Production Strategy (After Ref. 7)

7 Bruce Engelhardt, "Winning Today…Transforming to Win Tomorrow," *Department of the Navy FY 2006/FY 2007President's Budget,* VTC presentation to Conrad Seminar, Naval Postgraduate School, Monterey, CA, 23 February 2005.

Table 1.   Aircraft Production Strategy (From Ref. 8)

AIRCRAFT	FY05	FY06	FY07	FY08	FY09	FY10	FY11
JSF	-	-	-	10	32	36	33
F/A-18E/F	42	38	30	24	20	22	14
EA-18G	-	4	12	18	22	20	14
MV-22	8	9	14	19	30	35	38
AH-1Z / UH-1Y	7	10	18	21	21	22	23
MH-60S	15	26	26	26	26	17	15
MH-60R	6	12	25	25	30	30	31
E-2C	2	2	2	4	4	4	4
CH-53X	-	-	-	-	-	2	2
MMA	-	-	-	4	-	6	8
ACS	-	-	1	1	1	4	5
C-40	1	-	1	2	1	1	1
C-35	2	-	-	-	-	-	-
C-37	2	-	-	-	-	-	1
T-45	10	6	12	-	-	-	-
T-48	-	-	-	-	-	-	-
JPATS	2	-	24	48	48	48	48
KC-130J	4	12	-	-	-	-	-
V-XX	3	5	-	3	4	3	4
BAMS UAV	-	-	-	-	-	-	4
VTUAV	2	3	3	5	7	11	11
MC VUAV	-	2	1	2	3	-	-
F-5E	9	9	5	-	-	-	-
TOTAL	**115**	**138**	**174**	**212**	**249**	**261**	**256**

Nonetheless, aircraft recapitalization plays an important role in the overarching strategy of Sea Power 21. To succeed, in a resource-constrained environment, senior aviation officers in resource management decision-making billets must understand all aspects of "Defense business." One of the key challenges commanders face is balancing aircraft modernization with current readiness. As such, commanders may find it difficult to achieve this balancing act if they are not familiar with key business concepts, such as return on investment or cost benefit analysis. Business school graduate programs may provide the knowledge and analytical tools necessary to allow senior officers to minimize

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aircraft production costs while keeping new aircraft programs on budget and on schedule. Another example of Naval Aviation's trend towards better business practices is Tactical Aviation (TACAIR) integration. This plan is designed to ensure the long-term success of *Sea Power 21* by focusing on current readiness without ignoring the critical cost elements. For example, it calls for the integration of Reserve and Marine Corps air forces across the Naval Aviation spectrum. According to Bolkcom and O'Rourke,[9] this melding of forces should save billions of dollars by reducing the number of required F/A-18E/F and JSF aircraft by 497.

As previously discussed, TACAIR integration is just one example of how Naval Aviation plans to judiciously allocate resources in the new century. Meanwhile, the dynamic Naval Aviation environment of the 21st century, which has adopted business initiatives, such as ongoing process improvement, increases the need for senior aviation officers who hold graduate business degrees. Aviation officers, who are also business school graduates, may not only be better qualified to plan, organize, and resource tomorrow's Air Wings, but their resource management decisions will ultimately determine the role and shape of 21st Century Naval Aviation.

B.   CORPORATE LEADERSHIP

In August 2004, *Government Executive*[10] listed the top 25 Navy contractors. The rankings for these companies were based on fiscal 2003 revenues from Department of Navy contract awards. An internet search of each company's website revealed a profile of the current 2005 leadership. Table 2 summarizes the top 10 Navy contractors for 2004 and the education achievements of the company leaders.

Interestingly, the top five contractors are companies that will play a major role in modernizing Naval Aviation. For example, Lockheed Martin was awarded the contract to build the Navy's next generation Joint Strike Fighter (F-35). An industry team

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[9] Christopher Bolkcom and Ronald O'Rourke, "Navy-Marine Corps Tactical Air Integration Plan: Background and Issues for Congress," CRS Report for Congress, April 10, 2003[on-line]; available from http://www.fas.org/man/crs/RS21488.pdf; Internet accessed 23 April 2005.

[10] George Cahlink, "Close to Shore," *Government Executive;* Aug 15, 2004; 36, 14; ABI/INFORM Global pg. 72.

comprised of Boeing, Raytheon, Northrop Grumman, and GE are collaborating to build the F/A-18E/F Super Hornet. Additionally, Boeing was recently awarded the contract to replace the P-3 Orion surveillance aircraft with a new Multi-mission Maritime Aircraft (MMA). Nonetheless, efforts to modernize Naval Aviation will be at a disadvantage if senior leadership is dependent upon contractors for business management expertise during the life of each new major procurement program. Figure 2 shows planned aircraft retirements and replacements for fiscal year 06.


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-43 F-14 B/D
-22 S-3B        }  ———►        +24 F/A-18E/F

-3 SH-60
-3 MH-53E
-16 UH-3H
-5 HH-1N          }  ———►      +16 MH-60
-3 HH-46D

-3 CH-46E         ———►         +15 MV-22B
-6 KC-130RF       ———►         +5 KC-130J
-2 DC-9           ———►         +2 C-37A
-31 P-3C          ———►         (Future MMA)

-17 Trainer/Utility  ———►      +15 Trainer/Utility
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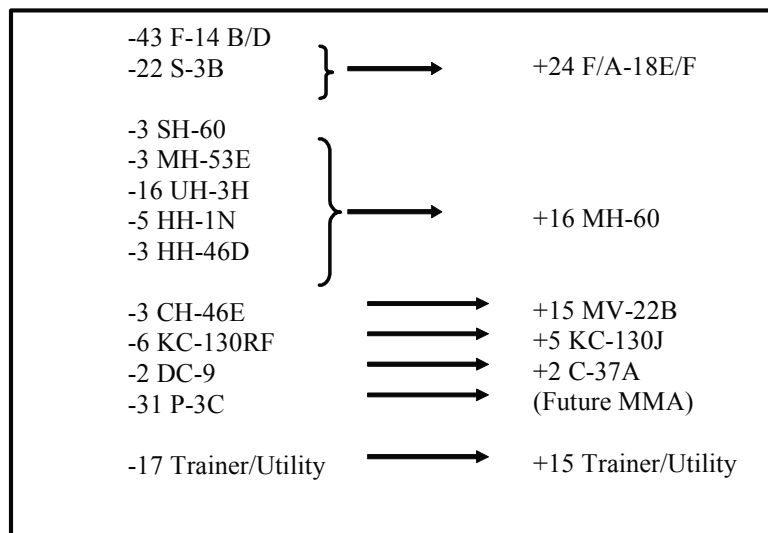
Figure 2.   Aircraft Retirements/Deliveries in FY06 (From Ref. 11)

One might compare the Navy's Flag officers to the Chief Executive Officers (CEOs) of private industry. They are responsible for hundreds of thousands of personnel and billions of dollars of resources.

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[11] Bruce Engelhardt, "Winning Today…Transforming to Win Tomorrow," *Department of the Navy FY 2006/FY 2007President's Budget,* VTC presentation to Conrad Seminar, Naval Postgraduate School, Monterey, CA, 23 February 2005.

Table 2.   Top 10 Navy Contractors for Fiscal 2003 (After Ref. 12)

RANK	COMPANY	AWARD $	LEADERS	EDUCATION	UNIVERSITY
1	Lockheed Martin	5,439,899,607	Robert J. Stevens President, and CEO	MBA	Columbia
2	Boeing	4,048,768,497	James A. Bell President, and CEO (interim)	BS Accounting	California State University at Los Angeles
3	General Dynamics	3,890,306,635	Nicholas D. Chabraja, Chairman and CEO	JD	Northwestern
4	Northrop Grumman	3,816,000,801	Ronald D. Sugar, Chairman, CEO, and President	PHD Electrical Engineering	University of California at Los Angeles
5	Raytheon	3,767,772,692	William H. Swanson, Chairman and CEO	BS Industrial Engineering	California Polytechnic State University
6	United Technologies Corp.	1,591,622,716	George David, Chairman and CEO	MBA	Harvard
7	General Electric	1,133,110,202	Jeffrey R. Immelt, Chairman and CEO	MBA	Harvard
8	Textron	834,327,050	Lewis B. Campbell, Chairman, President, and CEO	BS Mechanical Engineering	Duke University
9	Carlyle Group	759,418,948	Chairman	MBA	Harvard
10	Bechtel Group Inc.	674,677,871	Chairman and CEO	JD/MBA	Stanford University

As shown in Table 2, 60 percent of the leaders of the top 10 Navy contractors have extensive business education.   One example of the recognition of the need for business acumen of the future Navy leadership was articulated in the Secretary of the Navy's guidance for the fiscal 06 Rear Admiral Screen Board. Excerpts from the board's precept read as follows:

> In recent years, there has been a growing recognition of the importance of financial management in the planning and execution of Navy programs. Navy leadership must be able to develop and use the tools of sound financial management during decision-making processes. We must select flag officers who will contribute to a culture of improved productivity. In deciding who is best and fully qualified for selection, you should give careful consideration to the Navy's need for officers with proven expertise in the field of financial management.[13]

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[12] George Cahlink, "Close to Shore," *Government Executive;* Aug 15, 2004; 36, 14; ABI/INFORM Global pg. 72.

[13] FY-06 Promotion Selection Boards Precept for Promotion to the Permanent Grade of Rear Admiral.

C. ROLE OF THE MBA

As the aforementioned trends suggest, business expertise is increasing in importance for senior aviation officers. However, during the early stages of their careers, aviation officers are focused on the high training expectations that have been set. For example, mastering the knowledge and capabilities of one's aircraft and associated weapons systems, obtaining tactical experience, and developing combat leadership skills are the primary focal points for most junior aviation officers (O-1 to O-4). According to Kilkenny,[14] mastery of one's platform and war-fighting mission is the foundation for command selection.

Nonetheless, as previously discussed, O-5 and O-6 aviation officers must have business expertise if the long-term objectives of *Sea Power 21* are to succeed. According to Ullman,[15] "You train people to shoot rifles and to drive ships, tanks, and aircraft. You teach and educate people to be leaders." As such, the current readiness and modernization issues are more likely to succeed if leaders, responsible for major system program procurement development and execution, have the requisite business education and decision making skills required for the Sea Enterprise environment.

Previous research suggests that the primary role of an MBA degree is to provide an awareness of the business tools and processes currently being implemented within DoD and private industry. According to Sheldrake,[16] "The real value of an MBA is its ability to provide an excellent overview of business, management and leadership skills for those with limited business experience, or who are transitioning from a functional or technical career into a general management position." Accordingly, after spending most of their aviation careers in the cockpit, the MBA is an excellent tool for educating aviation officers in the formal business practices they will need to use in senior positions.

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[14] Joe Kilkenny, "Be Ready for Your Selection Board." *The Hook Magazine* (Winter 2002) [on-line]; available from http://www.tailhook.org/Wi02Bupers.htm; Internet accessed 15 February 2005.

[15] Harlan Ullman, "Educate the Military," Washington Times, April 13, 2005, p. 19.

[16] Peter Sheldrake, "Career planning and post-graduate education putting the pieces together," Australian CPA, no. 68 (1998): 27.

As such, an MBA may be the perfect professional development tool for preparing mid-grade aviation officers for the transition from the cockpit to managing the business of the Navy. Additionally, the MBA will also sharpen aviation officer's leadership and communications skills. To help achieve these objectives, the NPS Executive MBA (EMBA) is tailored for unrestricted line officers. It affords aviation officers the opportunity to pursue a business postgraduate degree without forsaking challenging operational tours in lieu of resident education. Moreover, the EMBA allows aviation officers to continue to sharpen their tactical skills, which weigh significantly for achieving career milestones (Department Head, Commanding Officer), while simultaneously sharpening their business skills, which are increasing in importance for senior officers.

Because the EMBA is a Defense-focused degree program, new skills can be immediately applied to the Navy. Once educated, aviation officers will have the requisite skills required to be better officers, business managers and leaders. For example, aviators who understand the business of the Navy may be more likely to ask intelligent questions and articulate how their ideas add value. As a result, Naval Aviation may benefit across the entire Aviation enterprise perspective to include budgeting, and acquisition. As stated by Hoewing, "We grow great warriors — we're good at that. But we also need to be able to grow visionary leaders. Being a visionary leader means knowing how to look at our institution from an enterprise perspective."[17]

D.   AVIATION OFFICER CAREER PATH

After commissioning, the early years of an aviation officer's career is structured around tactical training. Typically, the first two to three years are spent in initial flight training. After receiving their "wings of gold," aviation officers are assigned to their first operational squadron tour. Thus, training continues and an assignment cycle of sea duty, shore duty and staff duty commences.

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[17] Gerald Hoewing, "Manning the 21st Century From a Position of Strength" The Hook Magazine (Fall 2004) [on-line]; available from http://www.tailhook.org/FA04_Hoewing.htm; Internet accessed 18 February 2005.

Career progression weighs heavily on achieving certain milestones. As such, junior officers often adopt a short-term focus when planning for their primary career goal, i.e., only doing what is required to get selected for command. For instance, one of the first major milestones of an aviation officer's career is selection for Department Head. This occurs at the grade of O-4. During this tour, if a Department Head is able to demonstrate proven leadership skills, mastery of his platform, and also receive a competitive fitness report, he will probably screen for aviation squadron Executive Officer (XO), the second major milestone. The opportunity for achieving the second major milestone commences approximately one year prior to being in zone for Commander (O-5) and continues for 3 years.[18] A screened XO will automatically fleet up to Commanding Officer (CO) duties of an aviation command upon completion of a successful XO tour.[19]

Selection for the rank of Captain (O-6) is the next major career milestone. However, achieving this milestone depends heavily upon having completed a successful squadron CO tour. After selection for Captain, aviation officers will either remain on the operational track and compete for Major Command, such as an Air Wing or aircraft carrier CO, or become senior members of major Fleet or Joint Service staffs. Figure 3 shows a nominal Aviation career path. Opportunities for fulltime graduate education such as Naval Postgraduate School or Naval War College are illustrated above the figure.

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[18] Naval Military Personnel Manual, Article 1301-804 Command Policies and Procedures - Command Screen by Rank/Designator[on-line]; available from http://buperscd.technology.navy.mil/bup_updt/508/milpers/1301-804.htm; Internet accessed 13 April 2005.

[19] Ibid.

FLT TRNG	FRS	SEA TOUR	SHORE TOUR	SEA TOUR	FRS	SEA TOUR	SHORE TOUR	SEA TOUR CMD	SHORE/ SEA	SHORE/ SEA MAJ CMD
		FIRST SQDN	FRS TRACOM STAFF CNRC Grad Ed	SHIP SQDN STAFF		DEPT HEAD	OPNAV FLT STAFF NPC DC/JOINT GRAD ED	SQDN XO/ CO	CVN OPNAV FLT STAFF NPC DC/JOINT	CVN AIR WING NAS

ENS	LTJG	LT	LCDR	CDR	CAPT
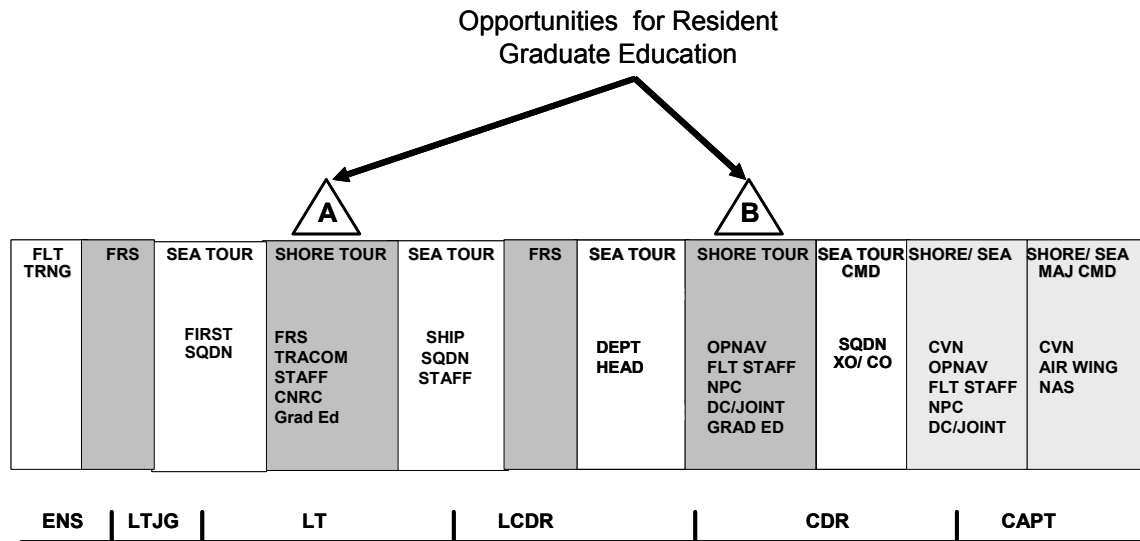
Figure 3.   General Aviation Officer Career Pattern (After Ref. 20)

E.   COMMAND REPONSIBILITIES

As discussed in the previous section, the two categories of command are Aviation Squadron Command and Major Command. The Squadron CO is an O-5 officer who was screened for command by a command selection board. This billet may be either afloat or ashore. Similarly, Major Command is the first screened command assigned to an O-6 officer.[21] It also may be either afloat or ashore.   Examples of Major Command are listed as follows:

- CO, Aircraft Carrier (CVN)
- CO, Carrier Air Wing (CVW)
- CO, Naval Air Station

In all cases, the position of Commanding Officer carries tremendous responsibility. COs are evaluated on how well they employ and manage hundreds of personnel and millions of dollars of resources. For example, an aircraft carrier CO is responsible for effectively managing a multi-billion dollar asset and a crew of approximately 5000 sailors (when its air wing is embarked). Similarly, an Air Wing

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[20] PERS 433E NROTC Brief [on-line]; available from http://www.npc.navy.mil/Officer/Aviation/; Internet accessed 15 April 2005.

[21] Naval Military Personnel Manual, Article 1301-800

commander is responsible for managing and employing approximately 80 multi-million dollar aircraft and over 2000 personnel. Nonetheless, on-the-job-training is the most common tool used for preparing these senior commanders for the incredible business challenges and resource management decisions they are certain to face.

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III. METHODOLOGY

This paper uses two strategies, supply and demand, to identify the importance of advanced business education for aviation officers. The supply strategy uses a cross-sectional study of the fiscal 2005 Officers Master File (FY 05 OMF). Data from the FY 05 OMF were provided by Naval Personnel Command staff (PERS- 432). The OMF contains numerous attributes of each and every individual Navy officer, such as education levels and command screen codes. Thus, it was possible to evaluate the educational achievements of 13,824 officers from the grades of O-1 through O-6 as well as the educational achievements of officers who have screened for command. The demand strategy uses data extracted from the Total Force Manpower Management System (TFMMS) to determine the number of aviation officer (13XX) billets that require a master's degree or higher. TFMMS uses the Navy's subspecialty system (subspecialty codes) to further define billet requirements. TFMMS data were provided by Naval Personnel Command staff (PERS- 432).

A.   SUPPLY ANALYSIS

1.   Aviation Designators

The approach for grouping aviation officers was based upon an analysis of officer designator codes. An officer designator is a four-digit code that the Navy uses to classify officers into specific categories. The first three digits of this code identify an officer by warfare specialty and the fourth identifies the officer's status (e.g., regular, or reserve officer). The focus on designators leads to the inclusion only of officers with designator codes of 13XX. For example, 131X identifies a pilot and 132X identifies a Naval Flight Officer (NFO). Table 3 shows the designators that were used in this project to categorize the aviation officer community.

Table 3.   Aviation Designators (After Ref. 22)

OFFICER CODE	DESCRIPTION
130X	Aviation Community member whose rating as a pilot or Naval Flight Officer (NFO) has been terminated.
131X	Pilot qualified for duty involving flying.
132X	NFO qualified for duty involving flying.
137X	Unrestricted Line Officer in training for duty as a NFO.
139X	Unrestricted Line Officer in training for duty as a pilot.

2.   Educational Achievements

a.   Education Level

After generating a group that defined the aviation officer community, the next step was to determine their level of education. In each officer's record, the OMF defined educational achievements by a one-digit education level code (see Table 4). Because this study focuses on graduate education, only officers who had a level code of 8, 9, or R were counted as having a master's degree.

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22 "Billet and Officer Designator Codes," *Navy Officer Manpower & Classification*, NAVPERS 15839I, (Vol II) PART A Section 2.

Table 4.   OMF Education Codes (After Ref. 23)

CODE	ABBREVIATION	DEFINITION
0	LS THN HS	Less than high school diploma; no equivalency certificate.
1	HIGH SCHL	High School diploma or High School Level General Educational Development (GED) Certificate.
T	CERT-COMP	A document certifying completion of an Organized Occupational Program (non-degree).
2	LS2YR COL	A minimum of 15 but less than 60 semester hours* of college credit in a degree program, or College Level General Educational Development (GED) Certificate.
3	2 YRS COL	A minimum of 60, but less than 90 semester hours* of college credit; or USAFI Educational Qualification Test 2CX (not administered after 1 January 1954).
4	3YR OR NA	A minimum of 90 semester hours* of college credit, no baccalaureate degree awarded; or an undergraduate degree from a non-accredited school.
5	PG NO DGR	No baccalaureate degree but completion of certain Navy-sponsored graduate education programs; or no baccalaureate but a minimum of 18 semester hours* in a master's degree program.
6	BACH/1PRO	Baccalaureate (BACH) or selected first professional (1PRO) degree.
7	POSTGRAD	Baccalaureate or first professional degree and a minimum of 18 credits* in a master's degree program; or a baccalaureate degree plus completion of certain advanced Navy-sponsored courses.
8	**MASTER**	**Master's degree or selected second professional degree; e.g., law (LL.M.).**
R	**P-MSTDGR**	**Post-master's degree. Degrees beyond the master's level but less than doctorate.**
9	**DOCTOR**	**Doctor's degree. PH.D or equivalent in selected fields.**

b.   *Education Major*

As discussed above, officers with 13XX designators were divided into two groups: those who have postgraduate degrees and those who do not. The next step was to identify those officers, within the group of postgraduate education, whose graduate degrees specialized in business. The OMF defines an occupational major by a two-digit numeric or alpha numeric "major code." This code is assigned to each officer's record.

Table 5 shows the major codes that qualified as being counted towards an advanced business degrees for this project.

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23 "Levels of Educational Achievement," *Navy Officer Manpower & Classification*, NAVPERS 15839I, (Volt II) Appendix D.

Table 5.   Major Field of Study

MAJOR CODE	ABBREVIATION	FIELD
77	ECONOMIC	Economics
78	ACCOUNTG	Accounting
80	BUS ECON	Business Economics; Commercial Education; Secretarial Education
81	BUS ADM	Business Administration; Advertising; Commerce; Foreign Trade; Marketing; Business Management
82	FINANCE	Banking; Finance
0A	MANAGMNT	Management

Of note, there were over 300 major codes listed in NAVPERS 15839I. In order to simplify the analysis, given the number of major codes, only graduate degrees that had a major code of 77, 78, 80, 81, 82, or 0A were categorized as graduate business degrees because they were the only business-related majors.

3.   Command-Screened Officers

The third area of analysis focused on analyzing the educational achievements of aviation officers who have screened for the position of Commanding Officer (CO).   The Navy separates the position of CO into three categories for the grade of O-5 and O-6: Aviation Command, Bonus Command, and Major Command.

First, Aviation Command is the first CO position for an O-5 aviation officer. Examples include CO of a fighter squadron or training command squadron. Next, Bonus Command, such as CO of a Fleet Replacement Squadron (FRS), is assigned to a senior O-5 or O-6 aviation officer who has demonstrated superior leadership as a CO of an Aviation Command. Finally, Major Command is the premier CO position for aviation officers at the grade of O-6.   Officers selected for Major Command have previously served as the CO of an Aviation Command. Examples of Major Command positions include CO of an aircraft carrier, Air Wing (CVW) or Naval Air Station.

The OMF identifies an officer that has screened for command by a Command and Operational Screen Results (CSR) code. The CSR code is a five digit alpha-numeric

code that more thoroughly describes officers chosen for command. For example, an officer's record that contained a CRS code of 1AM9Z is further analyzed in Table 6.

Table 6.   Sample CSR Code

	1st digit	2nd digit	3rd digit	4th digit	5th digit
CSR Code	**1**	**A**	**M**	**9**	**Z**
Description	Screening year (FY 01)	Principal selection	Aviation Captain (O-6)	Command Type (CVW)	First selection

As shown above, a 1AM9Z CSR code describes an O-6 aviation officer that was a principle selection for Major Command (CVW) during the fiscal 01 screen year (see Appendix A for a comprehensive description of CSR codes). However, the primary element of the CSR codes that identifies the category of command is determined by the alphabetic codes A, BEL, and AM. Table 7 shows three CSR codes examples and illustrates how command categories were identified.

Table 7.   Category of Command

CSR CODE	COMMAND CODE	COMMAND CATEGORY
9**A** 92Z	**A**	Aviation Command
95**BEL**	**BEL**	Bonus Command
1**AM**9Z	**AM**	Major Command

As shown above, the letters A and BEL within a CSR code identifies selection for Aviation Command and Bonus Command, respectively. Similarly, AM identifies

selection for Major Command. Given the relative few Bonus Command opportunities available, officers that were selected for Bonus Command were counted as having screened for Major Command.

B.   DEMAND ANALYSIS

Given that certain Navy billets require a master's degree level of education or higher, the final area of analysis was to determine the educational background of aviation officers that filled these billets. Table 8, shows the categories of billets that require advanced education.

Table 8.   Educational Skill Requirements (After Ref. 24)

CODE	DESCRIPTION	MASTER'S DEGREE REQUIREMENTS
0000	Any Discipline	Any Discipline.
2000	Policy, Strategy & Intelligence	International Relations, Area Studies, International Policy, Strategy, and Intelligence.
3000	Resource Management and Analysis	Financial, Transportation, Logistics, Public Manpower, Facilities, Operations, Manufacturing, Education, Acquisition Management and Operations Research.
4000	Applied Disciplines	Math, English, History, Psychology, Biology, Public Policy, Human Relations, Social Work, Counseling, and Journalism.
5000	Engineering & Technology	Aeronautical, Aerospace, Civil, Electrical, Electronic, Mechanical, Naval, Nuclear, and Systems Engineering.
6000	Operations	Information Systems, Modeling and Simulation, Computer Science and Systems, Underwater Systems, Meteorology, Oceanography, and Statistics.

To determine which requirements are assigned advanced degrees, the Navy uses the Total Force Manpower Management System (TFMMS) to track manpower requirements. This information system uses the Navy Subspecialty System (SSP codes)

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24 *Navy Officer Manpower & Classification*, NAVPERS 15839I, (Vol II) PART B Section 4

to identify requisite education, training, and experience for advanced education billets. In terms of experience level, the lowest rank considered for filling SSP coded billets is Lieutenant Commander.

Nonetheless, SSP coded billets are defined by a five digit alpha-numeric subspecialty code (SSP). These five digits define detailed requirements for advanced degree billets. However, the subspecialty major area for SSP-coded billets is defined by the first digit and the area of concentration is defined by the second digit. For example, a code of 3100 identify billets requiring Resource Management and Analysis major area and with a concentration in General Resource and Acquisition. See Appendix B for a complete description of core skills requirements.

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IV. ANALYSIS RESULTS

A. SUPPLY

1. Educational Findings

This section analyzes the supply of aviation officers with postgraduate business education by presenting a summary of the educational achievements of the aviation community. The results are separated into four categories: (1) Community summary; (2) Pilots; (3) Naval Flight Officers (NFOs); and (4) formerly rated pilots and NFOs (1300 designator). The percentage of officers with master's degrees for each category was calculated by dividing the number of officers who held a master's degree by the end strength of officers multiplied by 100. Of the officers who hold master's degrees, the percentage of postgraduate business degrees was calculated by dividing the number of officers with a master's degree by the number of officers who hold postgraduate business degrees multiplied by 100.

a. Aviation Community Results

Figure 4 summarizes postgraduate degrees (master's and business master's) held by the aviation community between the ranks of Ensign and Captain.
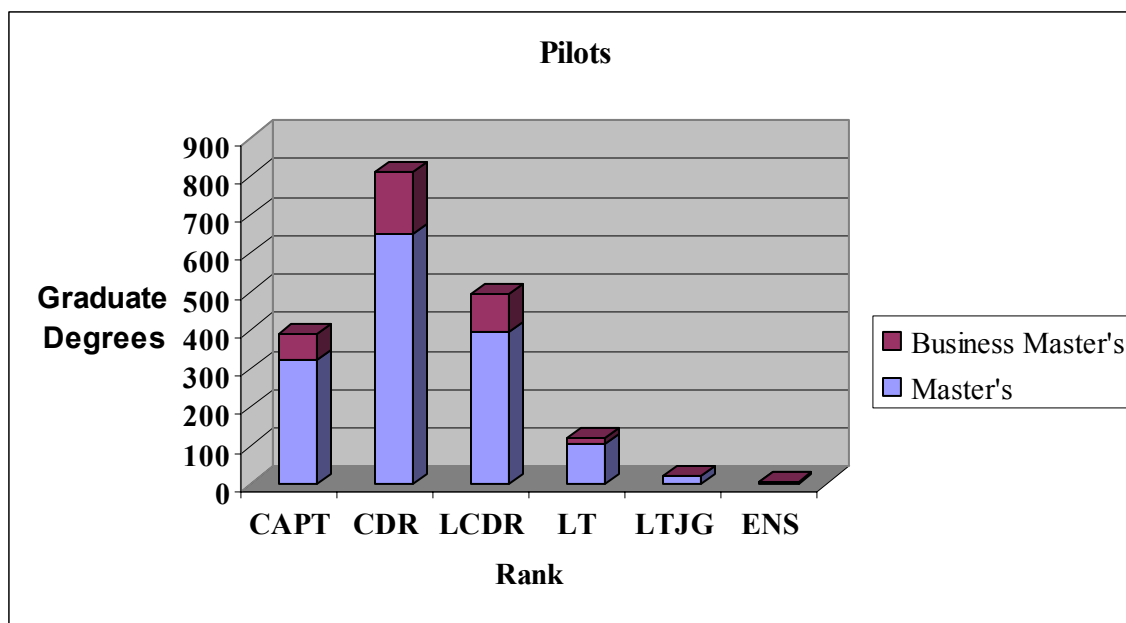
Figure 4. Composition of Master's Degrees

Specifically, Table 9 shows the percentages of aviation officers (O-1 to O-6) with master's degrees and the percentages of these postgraduate degrees that qualified as business master's degrees. Overall, 18 percent of 13,824 aviation officers analyzed in this study have earned a master's degree. However, on average, slightly under 25 percent of these master's were graduate business degrees.

Table 9. Aviation Community

RANK	END STRENGTH	MASTER'S DEGREE		BUSINESS MASTER'S	
		Number	Percent	Number	Percent
CAPT	806	537	67	123	23
CDR	1,865	1,124	60	282	25
LCDR	2,528	691	27	184	27
LT	4,247	149	4	35	24
LTJG	1,828	20	1	3	<1
ENS	2,550	10	0	0	0
TOTAL	**13,824**	**2,531**	**18**	**627**	**25**

As expected, the percentages of officers most likely to have earned a master's degree were at the ranks of Captain (O-6) and Commander (O-5). Although there are 806 Aviation Captains, 67 percent held a master's degree (23 percent were graduate business degrees). Similarly, 60 percent of Commanders held a master's degree of which 25 percent were business degrees. This is probably best explained by the fact that these officers have more years of service, and thus have had more opportunities for graduate education.

The largest percentage of officers with business graduate degrees (27 percent) was Lieutenant Commanders. But because graduate-educated Lieutenant Commanders are 33 percentage points less than Commanders and 39 percentage points less than Captains, any real impact of this phenomenon should be slight.

The percentage of Lieutenants with graduate degrees was 4 percent (24 percent business degrees). For the ranks of Lieutenant (junior grade) and Ensign, the percentages of officers with graduate degrees were less than 2 percent combined. This is probably best explained by the fact that flight training and their relatively short time in service has provided little opportunity for graduate education.

b. Results for Pilots (131X and 139X Designator)

Of 13,824 aviation officers analyzed in this project, 9,208 (67 percent) are pilots. Closely mirroring the entire aviation community, as shown in Table10, 74 percent of pilots at the rank of Captain and 57 percent at the rank of Commander held a master's degree. Similarly, column 6 shows that of these graduate degrees, 21 percent and 25, respectively, are business graduate degrees.

Table 10.   Pilots

RANK	END STRENGTH	MASTER'S DEGREE		BUSINESS MASTER'S	
		Number	Percent	Number	Percent
CAPT	438	325	74	67	21
CDR	1,137	650	57	161	25
LCDR	1,707	394	23	102	26
LT	2,949	102	4	19	19
LTJG	1,325	19	1	3	16
ENS	1,652	8	1	0	0
TOTAL	**9,208**	**1,498**	**16**	**352**	**24**

In the same way as illustrated for the aviation community as a whole, Lieutenant Commanders had the highest percentage of business graduate degrees (26 percent) but had a considerably lower percentage of officers with advanced degrees when compared to more senior officers. Moreover, in contrast to the community summary, a higher percentage of graduate-educated Lieutenant (junior grade) officers (16 percent) held business graduate degrees, but the numbers are very small.

c.   *Results for NFOs (132X and 137X Designator)*

In terms of percentages, the NFO category led the community in business graduate degrees. As shown in Table 11, 26 percent of all Captains and Commanders have advanced business degrees.   Moreover, 28 percent of Lieutenant Commander's advanced degrees were business related.

Table 11.   Naval Flight Officers (132X and 137X)

RANK	END STRENGTH	MASTER'S DEGREE		BUSINESS MASTER'S	
		Number	Percent	Number	Percent
CAPT	366	210	57	55	26
CDR	725	473	65	121	26
LCDR	805	294	37	82	28
LT	1,298	47	4	16	34
LTJG	503	1	0	0	0
ENS	802	1	0	0	0
TOTAL	**4,499**	**1,026**	**23**	**274**	**27**

Interestingly, 34 percent of the advanced degrees held by Lieutenants were business degrees. This compares to 19 percent for pilots at the rank of Lieutenant and 24 percent of Lieutenants in the community as a whole. However, no officer below this rank had a business graduate degree.

Of note, not only did NFOs have the highest percentage of officers with business degrees (27 percent), the also had the highest percentage of officers with advanced degrees (23 percent).

d.   Results for Formerly Rated Pilots and NFOs (130X Designator)

As discussed earlier, members of the aviation community with a 1300 designator were formerly rated pilots and NFOs. Generic reasons for pilot or NFO rating termination may include: (1) being found not physically qualified (NPQ) for aviation service; (2) being involved in an incident upon which a formal aviation board has determined that these officers were no longer suitable for assignments involving flying; and (3) aviation students who failed to earn their "wings of gold" from flight training.

Nonetheless, as shown in Table 12, one half of the Captains with this category held a business master's degree. However, it is worth noting that the population for this rank consisted of only two officers.

Table 12.   Pilots/NFOs with Terminated Ratings (130X)

RANK	END STRENGTH	MASTER'S DEGREE		BUSINESS MASTER'S	
		Number	Percent	Number	Percent
CAPT	2	2	100	1	50
CDR	3	1	33	0	0
LCDR	16	3	18	0	0
LT	0	0	0	0	0
LTJG	0	0	0	0	0
ENS	96	1	1	0	0
TOTAL	**117**	**7**	**6**	**1**	**14**

Interestingly, 96 out of 117 (82 percent) of the officers that represent this category were Ensigns. This is probably explained by the fact that the majority of these officers may have been found not physically qualified (NPQ) for aviation service during flight training or may have failed to earn their "wings of gold." Nonetheless, only one officer (Captain) from this category held an advanced business degree.

2.   Commanding Officers Findings

Another way to look at the data is by analyzing the importance graduate business education plays in achieving major career milestones.   Based upon the time of data extraction, Table 13 shows that 17 percent of all aviation officers (O-5 and O-6) with postgraduate degrees who have served or have been selected to serve as Commanding Officer have a business master's degree.

Table 13.   Commanding Officer Summary

OFFICERS SCREENED	MASTER'S DEGREE		BUSINESS MASTER'S	
	Number	Percent	Number	Percent
1353	1143	84	199	17

a.   *Results for O-6 Aviation Officers*

As Figure 5 shows, 353 pilots and 163 NFOs at the rank of Captain were shown to have screened for Major Command. Nonetheless, a comparison between screened pilots and NFOs can be quite illuminating.
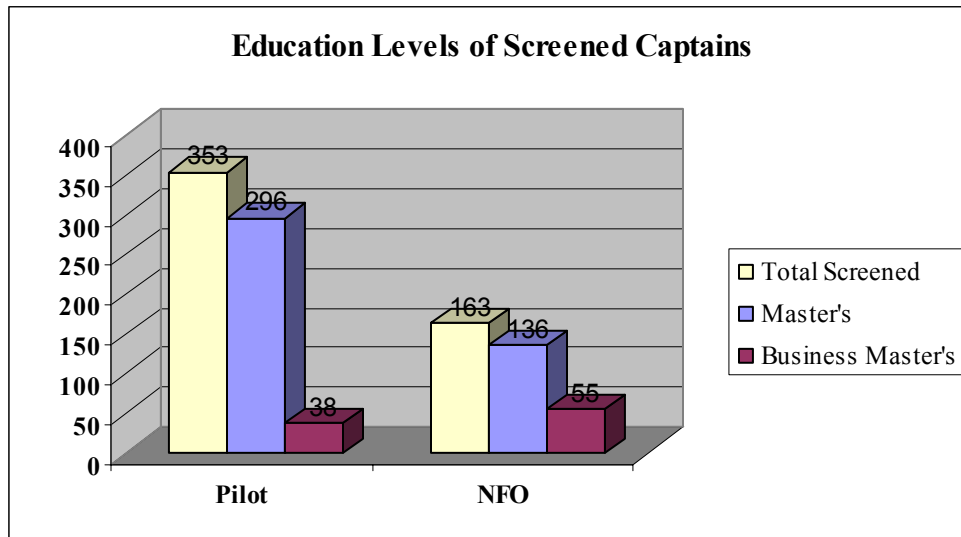
Figure 5.   Screened Captains

As shown above, 296 (84 percent) of the pilots and 136 (83 percent) of the NFOs held a master's degree. However, there is a major contrast between the number of pilots and NFOs who have earned a business master's. Although 38 (13 percent) of the pilots hold a graduate business degree, 55 (40 percent) of the NFOs advanced degrees were business degrees. Also note that of the 516 Captains that screened for Major Command, 163 (32 percent) are NFOs.

b.   *Results for O-5 Aviation Officers*

Figure 6 shows the number of Commanders who have screened for Aviation Command. Of the 443 pilots and 394 NFOs that screened, 290 pilots (65 percent) and 142 NFOs (36 percent) held master's degrees.
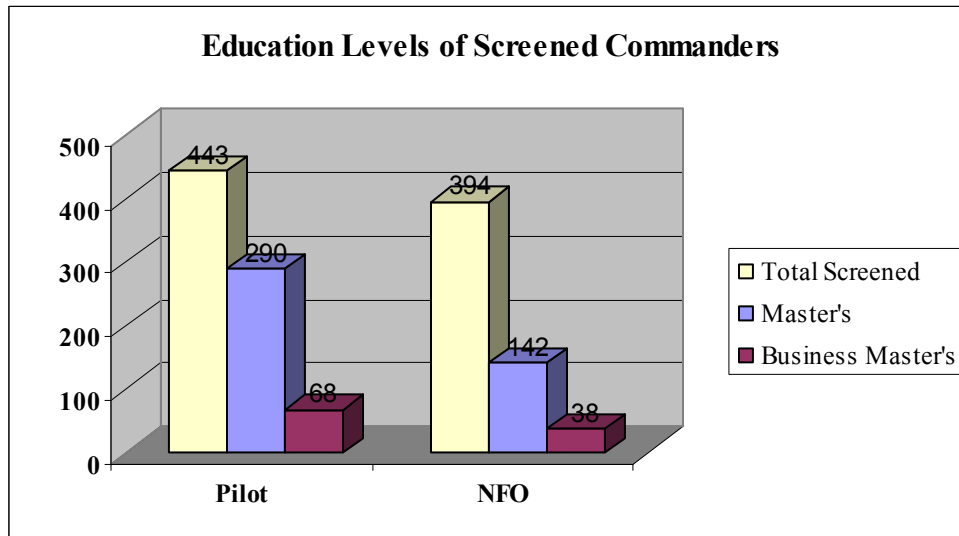
Figure 6.   Screened Commanders

Of these figures, 68 pilots (23 percent) and 38 NFOs (27 percent) had graduate business degrees. Although these percentages are relatively close, they reveal a trend somewhat different from screened Captains. For example, screened pilots, at the rank of Captain, had a lower percentage (11 percentage points) of business graduate degrees when compared to pilots at the rank of Commander. Conversely, screened NFOs, at the rank of Captain, had a higher percentage (14 percentage points) of advanced business degree graduates. Of the note, of the 837 Commanders who screened for Aviation Command, 394 (47 percent) were NFOs.

B.   DEMAND

1.   Aviation Officer Billets

To this point, the supply of aviation officers with graduate business degrees has been discussed. This section addresses the demand for aviation billets. Table 14 shows

the Navy's requirements for aviation officer (13XX) billets. The billets are divided into three groups: (1) billets that require an advanced degree, (2) billets that only require significant experience, and (3) billets that do not require incumbents to have a subspecialty, i.e., no SSP code. Distinct differences between these groups are observable.

Table 14.   Demand for Aviation Officer (13XX) Billets

CODE	DISCIPLINE	BILLETS Advanced Degree	%	BILLETS Experience Only	%	BILLETS No Subspecialty	%	BILLET Total
0000	Any	2	1	0	0	-		2
2000	Policy, Strategy & Intelligence	18	8	28	6	-		46
3000	Resource Management and Analysis	29	14	165	37	-		194
4000	Applied Disciplines	2	1	2	<1	-		4
5000	Engineering & Technology	125	58	58	13	-		183
6000	Operations	39	18	199	44	-		238
None	No Subspecialty	-	-	-	-	7957		7957
			100%		100%			
TOTAL		215	2.5%	452	5.2%	7957	92.2%	8624

For the 215 subspecialty coded billets that require incumbents to have a mater's level of education or higher, the minimum required level of experience is the rank of Lieutenant Commander. As such, the data show that the Navy's demand for the majority of these billets (grade O-4 to O-6) was for aviation officers with Engineering and Technology (58 percent) or Operations (18 percent) areas of specialization. This is probably best explained by the high level of technological and operations acumen required for managing the advanced systems of today's Navy.

However, the next highest demand was for officers with a specialization in Resource Management and Analysis. Thus, the Navy's demand for officers with postgraduate business education accounts for slightly less than 14 percent of the aviation billets that require a master's level or higher degree. Rounding out the top four specialization areas was Policy, Strategy & Intelligence (8 percent). This is probably attributed to the increasing requirements for military officers to complete Joint Professional Military Education (JPME) requirements in Service College resident courses or part-time programs for promotion considerations.

The requirements for the next group of subspecialty coded billets only stipulate that incumbents must have achieved a certain level of experience. In most cases, except for the Engineering and Technology discipline, the Navy's demand for aviation officers with "experience only" significantly exceeds the demand for advanced education. For example, the data show that there are 29 billets that require postgraduate education specializing in Resource Management and 165 billets, within the same area of specialization that only require significant levels of experience.

V.   SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

A.   SUMMARY AND CONCLUSIONS

In this project, the graduate education levels of aviation officers were analyzed in terms of supply and demand. All data for this project were provided by the Naval Personnel Command staff (PERS- 432). As observed in Chapters IV, two groups of results were presented.

First, the supply of aviation officers who have business postgraduate degrees was determined by analyzing the three groups of designators that comprise the aviation community. A cross-sectional study of the FY 05 OMF provided a snapshot of the educational achievements of the entire Naval Aviation population. After individually analyzing the three types of naval aviation officers, the project was lengthened to study the education backgrounds of officers who have screened for the position of Commanding Officer. This concentration allowed the business education trends of current and future leaders of Naval Aviation to be recognized.

The second group of results focused on the Navy's current demand for aviation officer with graduate business degrees. Data regarding current aviation officer billets that require a master's level of education or higher, were identified through the Total Force Manpower Management System (TFMMS). An analysis of these data provided a picture of the current Navy requirement for postgraduate business education. After this analysis, it was possible to distinguish which education areas of specialization were most desired by the Navy.

Observations from this project suggest that senior aviation officers are more likely to have a postgraduate degree than junior officers. Nonetheless, 25 percent of all aviation officers between the ranks of Ensign and Captain have a graduate business degree.   Of the officers who hold graduate degrees, approximately one out of four have a postgraduate degree with a business specialization. Moreover, the data show that although NFOs are more likely than pilots to have a graduate degree, there is only a slight difference in the percentages of advanced business degrees between pilots and NFOs.

Regarding O-6 aviation officers who have screened for Major Command, there was a substantial difference between the percentages of pilots and NFOs who had an advanced business degree. NFOs at the rank of Captain were three times more likely to have a postgraduate business degree than pilots. However, there was only a slight difference in the percentages of graduate business education between O-5 pilots and NFOs who have screened for aviation command. Nonetheless, a total of 17 percent of all selected, current, or former Commanding Officers who hold an advanced degree and remain on active duty have a business master's degree.

Furthermore, as discussed in Chapter IV, for the aviation officer billets that require an advanced degree, the Navy's requirements were highest in the technical areas of expertise. For example, the fields of Engineering and Technology, and Operations had the highest number of billets requiring advanced education. This seems to suggest that advanced technical degrees are more highly valued than others. Regarding Resource Management and Analysis subspecialty billets, the data show that for each billet that requires postgraduate business education there are six billets that only require incumbents to have gained significant experience instead of graduate business education.

Generally, the data show that the current requirement for subspecialty coded aviation officer billets is quite small. For instance, 2.5 percent of the total billets require an advanced degree and 5.2 percent require only a significant level of experience. Additionally, there remain 7957 billets with requirements that spread across the various disciplines, that don't require a subspecialty code. That is, for these remaining billets neither advanced education nor significant levels of experience are required.

Finally, although this research demonstrates the Navy's partiality towards advanced technical degrees, Chapter II plainly illustrates senior leadership views towards business education are changing. Despite the importance of advanced technical education, the skills acquired through advanced business education are of equal importance within the current environment of transformation and scarcity of resources. Today's Navy is committed to improving infrastructure investment decision making for weapon systems, shipbuilding, maintenance, and Fleet business management practices. Although there are relatively few aviation officer coded billets that stipulate postgraduate

business education, the tools from a graduate business curricula bests prepares senior officers to run the business and manage the resources of the Navy as we surge into dynamic and uncertain environment of the 21st century.

B.   RECOMMENDATIONS

1.   Postgraduate Business Education as a Key Career Milestone

Because aviation officers recognize mastering one's platform as essential to achieving career milestones, they often opt to remain in the cockpit for as long as possible.   However, to adapt to the Sea Enterprise environment, a more balanced approach to career development should be undertaken.   Business education should equally serve as a key milestone for career progression and more importantly, for consideration for selection to the position of Commanding Officer.

2.   Early Emphasis of Postgraduate Business Education

There is no question of the importance of aviation officers in acquiring the operational skills sets required to defeat adversaries. However, more attention should be directed towards ensuring that these warfighters have the business skills required to effectively manage the business side of the Navy as senior officers.   By noting "recommended for MBA" on the fitness reports (FITREPs) of promising junior officers, the importance of achieving graduate business education is emphasized early in an officer's career.

3.   Tie First Shore Tour to Business School

Naval Aviation leadership should consider the opportunity to tie highly competitive shore tour assignments, such as a Fleet Replacement Squadron (FRS) Instructor, to advanced business education. For example, officers accepting FRS orders would be strongly recommended to apply for the NPS EMBA program within the first six months of the tour.   However, linking distance learning degree programs such as the NPS EMBA to shore duty assignments would require the aviation community to also

consider adding billets to appropriate commands to support a viable assignment structure for EMBA/MBA degree candidates in the detailing process.

4. Increase Billet Requirements for Advanced Business Degrees

Finally, consider modifying a substantial number of the coded aviation officer billets that currently only require experience to include a requirement for a postgraduate business degree. Perhaps a one to one ratio of experience only versus graduate education may better serve the Navy in achieving its goal of running the business of the Navy in a more efficient manner.

5. Future Research

Although this study focuses on the supply and demand aspects of postgraduate business, it does not show the impact business skills have on the daily decision making activities of senior leaders. One possible method of providing evidence of this impact would be through a survey such as an open-ended questionnaire where senior officers would be asked to list the skills they view as most important in performing their daily activities. The results of this survey may further validate the value, importance, and need for senior officers to acquire postgraduate business education early on in their careers.

APPENDIX A. COMMAND AND OPERATIONAL SCREEN RESULTS

Command and Operation Screen Results (CSR Code) is a five-position alpha-numeric code assigned to officers who have been selected by a Command or Operational Screening Board. The code describes fiscal year considered, the type of command for which selected (or deselected), and the officer's standing (e.g., primary, alternate, etc.). The first position of the CSR code indicates the final digit of the fiscal year in which most recent action was taken. An "X" filled in for the first digit indicates that the date of screening action is not known. The Second position indicates Selection Category.

Table 15.   Command Screen Code (2nd Position) (From Ref. 25)

CODE	CATEGORY
A	Command Principal
B*	Command Alternate
C	XO Principal
D	XO Alternate
E	POW or MIA (CDR Aviation CMD Screen Board only)
F	Department Head Principal Selection
G	OIC RESFORON
H	Principal Assignment
Q	XO Qualified
W**	Personal Descreen (Officer Request)
X**	Administrative Descreen
Y**	Medical Descreen
Z**	Performance Descreen

* Alternate selectees for aviation command are not coded.

** Codes W, X, Y, and Z are determined by a BUPERS division director in writing.

The Third position indicates Board Sponsor. Alpha/numeric: 0 - 9 Aviation CDR (and type A/C squadron); A - Z other.

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Table 16. Command Screen Code (3rd Position) (From Ref. 26)

CODE	BOARD SPONSOR	CODE	BOARD SPONSOR
1	Attack	A	Surface LT
2	Fighter	B	Submarine LT
3	ASW	C	Surface LCDR
4	EW	E	Submarine LCDR
5	ELINT/RECCE	F	Restricted Line/Staff LCDR
6	Other Helo	G	Surface CDR
7	Training	H	04 Principal
8	SPEC MIS/VC	I	Submarine CDR
9	Shore	K	Surf/Submarine CAPT
0	Other/VR	L	JAG LCDR (Subsequent to Year Group 1971)
		M	Aviation CAPT
		N	Major Project Management (RL/Staff only)(prior to February 1986 only)
		P	Special Operations LCDR
		Q	Special Operations CDR
		R	Special Warfare LCDR
		S	Special Warfare CDR
		T	Restricted Line/Staff CDR
		U	Restricted Line/Staff CAPT
		V	Medical Department
		W	Assistant Director for MP Policy (PERS-2MM)

The Fourth position indicates type of command for which screened. Some codes are not currently in use.

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Table 17.   Command Screen Code (4th Position) (From Ref. 27)

CODE	TYPE
1	F4, P3, E1, RA5, HC, JET NAVFAC, C9
2	A6, F8, HS, E2, EA3, HM, PROP, FA18
3	A7, F14, EA6, HELO, HSL
4	S2/S3, RF8, TACRON, Other
5 (FRS)	F4, P3, E2, RA5, HC
6 (FRS)	A6, F8, HS, EA3, HM
7 (FRS)	A7, F14, EA6, HSL
8 (FRS)	S2/S3
9	CVW
0	Other
A	Ship (first sequentials for aviators; any ship for 11XX officers)
B	Diesel Sub/ASR
C	SUBRON/AS
D	Nuclear Sub
E	LPH/LHA/PHIBRON
F	CRU/DES Ship
G	CVA/CVAN/CV/CVN
H	SERVRON/CVT
I	Amphibious Ship
J	Sevice Ship
K	DESRON (NRF)
L	ASR
M	Major COMMSTA
N	Major Shore
O	Miscellaneous Shore
P	Major Program Manager
Q	Recruiter
R	Special Operations Acting
S	Special Warfare Acting
T	Reserve Aviation Shore
U	Both, major Sea (A) and Shore command (N)
V	Legal Support Command
W	PATWING
X	Major Medical Command
Y	Other Medical Command
Z	Medical Support Command

The Fifth position indicates the second type of command for which screened, if any.

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Table 18.   Command Screen Code (5th Position) (From Ref. 28)

CODE	TYPE
B	Early Ship (Exclusively for use with 13XX CDR selected for early deep draft command.)
C	Surface LCDR XO (Used for strategic weapons and diesel submarine officers who have been selected for surface LCDR XO or surface CDR CO assignments in addition to submarine/ASR CO or XO assignments.)
E	Surface Ship XO Qual Tour (Used for officers selected both for diesel submarine command <u>and</u> surface XO tours in which to qualify for surface command.)
G	Surface CDR CO (Used for strategic weapons and diesel submarine officers who have been selected for surface LCDR XO or surface CDR CO assignments in addition to submarine/ASR CO or XO assignments.)
H	Post-Major Commander
N	Major Shore
O	Miscellaneous Shore
P	Major Project Management
Q	Recruiter
Z	No second selection. Second commands for aviation CDRs covered by 4th position of code.

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APPENDIX B. CORE SKILLS REQUIREMENTS

Table 19.   Core Skills Requirements (After Ref. 29)

CODE	EDUCATION
	ANY DISCIPLINE
0000	Any Discipline
	NATIONAL SECURITIES STUDIES
2000	National Security Studies – General
2101	Middle East, Africa, & South Asia
2102	Far East & Pacific
2103	Western Hemisphere
2104	Europe Russia & Associated States
2200	Regional Intelligence – General
2201	Regional Intelligence – Middle East, Africa, and South Asia
2202	Regional Intelligence – Far East/Pacific
2203	Regional Intelligence – Western Hemisphere
2204	Regional Intelligence – Europe, Russia and et al
2400	Strategic Intelligence
2500	Special Operations/Low Intensity Conflict
	RESOURCE MANAGEMENT & ANALYSIS
3000	Resource Management and Analyis – General
3100	General Resource and Acquisition Management
3110	Financial Management
3111	Financial Management – Comptroller
3112	Financial Management – Major Comptroller
3120	Logistics and Transportation Management
3121	Logistics and Transportation Management – Logistics
3122	Logistics and Transportation Management – Transportation
3130	Manpower Systems Analysis Management
3150	Education & Training Management
3210	Operations Research Analysis
3211	Operations Research Analysis – Analysis and Assessment
3212	Operations Research Analysis – Logistics
	APPLIED DISCIPLINES
4000	General Applied Disciplines
4100	Mathematics Applied Disciplines
4201	Operational Sciences – Chemistry
4301	Academic Support – English
4302	Academic Support – History
4400	Public Affairs
4500	Leadership Education and Development
	ENGINEERING & TECHNOLOGY
5000	General Engineering and Technology
5100	Naval Construction Engineering
5101	Naval Architecture
5102	Power Systems
5103	Acoustics
5104	Missiles
5200	Nuclear Engineering
5201	Naval Nuclear Engineering

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5202	Reactors
5203	Plant Propulsion Systems
5300	Electrical/Electronic Systems Engineering
5301	Electrical Systems
5302	Communication
5303	Electro-Magnetic
5304	Guidance/Navigation
5305	Power Systems and Electric Drive
5306	Digital Signal Processing
5307	Electronic
5308	Total Ship Systems
5309	Computer Science
5400	Aeronautical Engineering
5401	Aeronautical Engineering – Avionics
5402	Aeronautical Engineering – Aerospace
5403	Test Pilot
5500	Space Systems Engineering
5600	Mechanical Engineering (General)
5601	Naval Mechanical Engineering
5602	Total Ship Systems
5700	Combat Systems
5701	Combat Systems – Sensors
5702	Combat Systems – Weapons
5703	Combat Systems – Physics
5704	Combat Systems – Acoustics
5705	Combat Systems – Total Ship Systems
5706	Combat Systems – Missiles
5707	Combat Systems – Software Design
5708	Combat Systems – Robotics
5709	Combat Systems – Strategic Weapons
5710	Combat Systems – Strategic Navigation
	OPERATIONS
6000	General Operations
6100	Information, System and Operations
6200	Information Sciences, Systems and Operations
6201	Information Systems and Technology
6202	Modeling & Simulation
6203	Computer Science and System Design
6204	Joint Command, Control, Communications, Computers & Intelligence (C4I)
6205	Information Warfare
6206	Space Systems Operations
6207	Intelligence Information Management
6301	Undersea Warfare
6401	Metoc Operational Sciences
6402	Oceanography Operational Sciences
6403	Meteorology Operational Sciences
6500	Systems Engineering and Analysis

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